



**B E R T I E**  
**water**  
**treatment**  
**plant**

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REGULATORY & RESEARCH  
DIVISION OF THE  
MINISTRY OF THE ENVIRONMENT

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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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**1967**

Bertie : water treatment plant.  
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ONTARIO WATER RESOURCES COMMISSION  
801 BAY STREET, TORONTO 5  
OFFICE OF THE GENERAL MANAGER

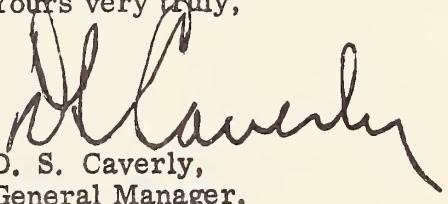
Members of the Bertie Local Advisory Committee,  
Township of Bertie.

Gentlemen:

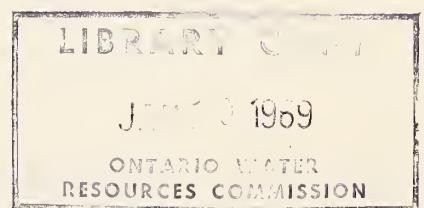
We are happy to present you with the 1967 Operating Summary for the  
Bertie Water Treatment Plant, OWRC Project No. 6-0047-59.

Your co-operation with our staff throughout the year has been appreciated.

Yours very truly,

  
D. S. Caverly,  
General Manager.

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Environment Ontario  
Environment Canada  
Subsidiary of the  
Ontario Provincial  
Water Resources Commission  
Canada



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ONTARIO WATER RESOURCES COMMISSION

801 BAY STREET  
TORONTO 5

TELEPHONE 365-

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VICE-CHAIRMAN

D. S. CAVERLY  
GENERAL MANAGER

W. S. MACDONNELL  
COMMISSION SECRETARY

General Manager,  
Ontario Water Resources Commission.

Dear Sir:

I am pleased to submit to you the 1967 Operating Summary for the Bertie Water Treatment Plant, OWRC Project No. 6-0047-59.

The summary reviews progress during the year, outlines operating problems encountered and summarizes in graphs, charts and tables all significant flow and cost data.

Yours very truly,

A handwritten signature in cursive script, appearing to read "McTavish".

D. A. McTavish, P. Eng.,  
Director,  
Division of Plant Operations.



## **FOREWORD**

● This operating summary has been prepared in order to acquaint readers with the management of the project during 1967. The efficiency of the plant's operation is reflected in a general review. Significant financial details are recorded, and technical performance is illustrated by graphs and charts.

The summary should answer two salient questions. Are the project's facilities adequate at this time? And can the project meet future requirements?

The Regional Operations Engineer is primarily responsible for the preparation of the report, and will be pleased to answer any questions regarding it.

Most of the material for the graphs and charts was compiled by the statistics section of the Division of Plant Operations, with the final versions of the graphs being drawn by the draughting section of the Division of Sanitary Engineering. Cost data were provided by the Division of Finance.

It will be evident from the report that all of these groups co-operated with substantial success.

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**B E R T I E**  
**water treatment plant**  
operated for  
THE TOWNSHIP OF BERTIE  
by the  
ONTARIO WATER RESOURCES COMMISSION

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F. A. Voege	A. K. Watt

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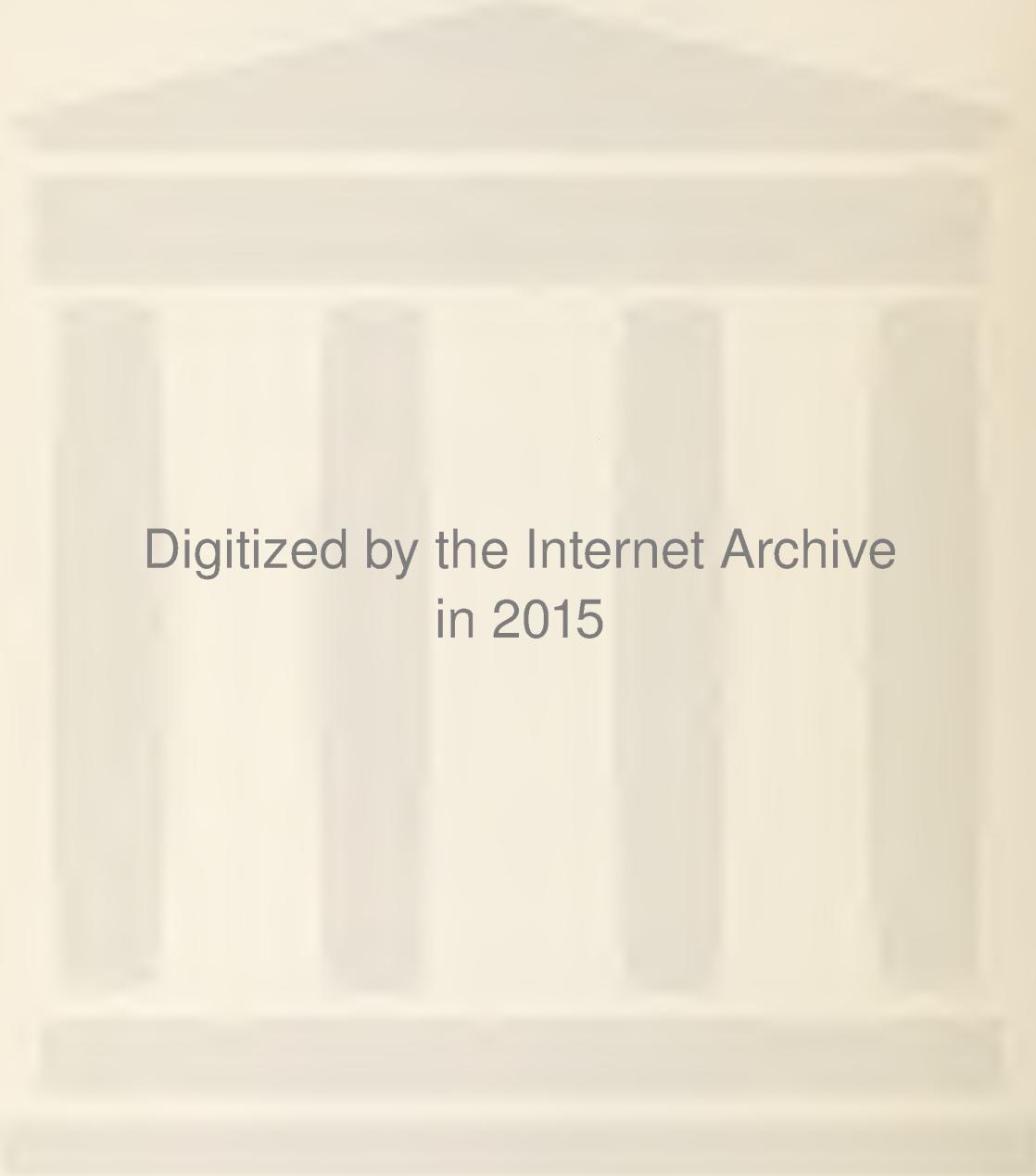
W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

DIRECTOR: D. A. McTavish

Assistant Director:	C. W. Perry
Regional Supervisor:	A. C. Beattie
Operations Engineer:	R. S. McKittrick

801 Bay Street      Toronto 5



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# **'67 REVIEW**

The Township of Bertie Water Treatment Plant operated successfully in 1967, processing a total of 506.22 million gallons of water. This is an increase of 7.2% over 1966. A peak flow of 2.90 MGD was pumped in July.

The total operating costs for 1967 were \$46,873.97 for a cost of \$0.09 per thousand gallons. This is a decrease of 10% from the 1966 cost per million gallons and is due to the increase in plant flow in 1967.

The treated water quality was satisfactory in 1967 with a slight increase in treated water turbidities noted during the year. The bacteriological quality of the water was entirely satisfactory on the basis of bacteriological samples taken during the year.

#### **PROJECT STAFF**

The staff complement at the Bertie Township plant consists of five regular employees and one casual. There is 24 hour supervision of the plant, including both process and equipment.

## PROJECT COSTS

NET CAPITAL COST (Estimated)	
Long Term Debt to OWRC	<u>\$763,735.17</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1967	<u>\$117,921.97</u>
Debt Retirement	\$ 15,412.00
Reserve	4,056.78
Interest Charged	43,069.68
Net Operating	46,873.97
 TOTAL	<u><u>\$109,412.43</u></u>

### RESERVE ACCOUNT

Balance at January 1, 1967	\$ 31,361.20
Deposited by Municipality	4,056.78
Interest Earned	<u>1,867.54</u>
	\$ 37,285.52
Less Expenditures	<u>—</u>
Balance at December 31, 1967	<u>\$ 37,285.52</u>

# MONTHLY OPERATING COSTS

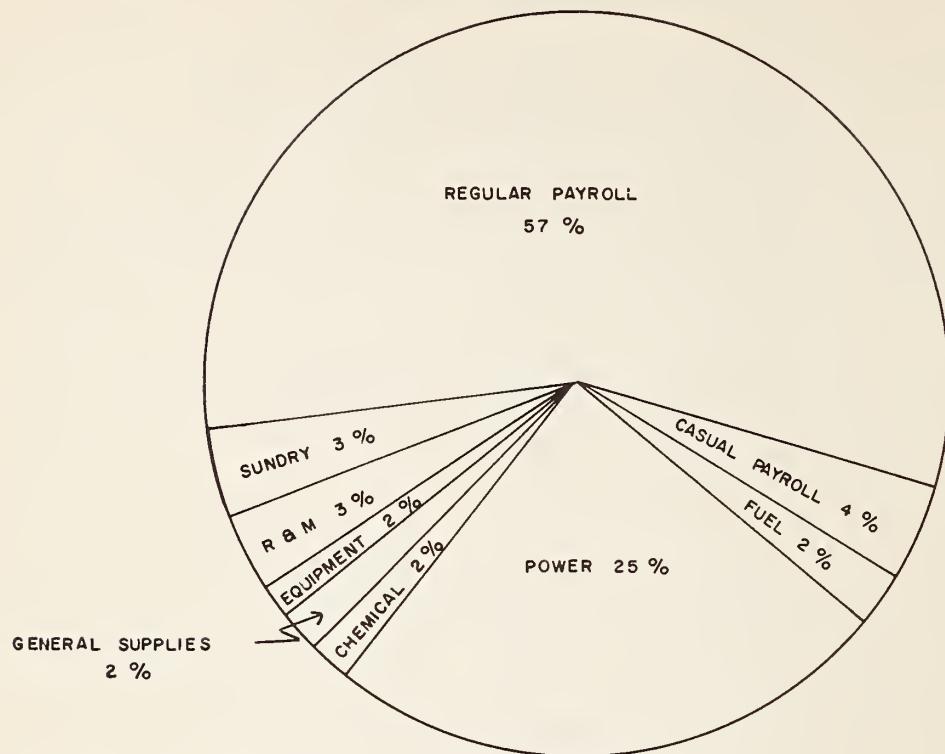
MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDY
JAN	2,430.15	1,919.80	102.40				12.83	124.25	247.52	23.35
FEB	3,261.06	1,920.61	62.70	183.18	890.18		85.74	71.00		47.65
MARCH	4,851.39	3,159.98	173.45	162.18	905.21	140.75	74.21	95.70	(83.97)	223.88
APRIL	3,615.25	2,010.95	110.34	160.98	911.29	100.00	27.64		110.02	184.03
MAY	3,429.12	2,229.99	78.58	114.38	900.34	3.60	84.59			17.64
JUNE	3,547.32	2,024.55	110.34	91.38	924.81	149.25	79.04		14.37	153.58
JULY	3,517.17	2,039.89	168.91	22.98	1,097.60		83.58			104.21
AUG	3,963.23	2,045.01	316.78	5.78	1,212.94	254.70	72.45		0.06	55.51
SEPT	4,748.57	3,054.93	316.37	2.56	1,163.84		57.92		100.12	52.83
OCT	3,524.39	2,041.32	285.02	3.38	890.43	127.35	106.55	23.72		46.62
NOV	2,831.71	2,036.72	110.34	27.78			79.10	61.45	7.06	509.26
DEC	7,154.61	2,065.46	142.10	214.16	2,716.67	191.03	160.64	323.91	1,176.77	163.87
<b>TOTAL</b>	<b>46,873.97</b>	<b>26,549.21</b>	<b>1,977.33</b>	<b>988.74</b>	<b>11,613.31</b>	<b>966.68</b>	<b>924.29</b>	<b>700.03</b>	<b>1,571.95</b>	<b>1582.43</b>

BRACKETS INDICATE CREDIT

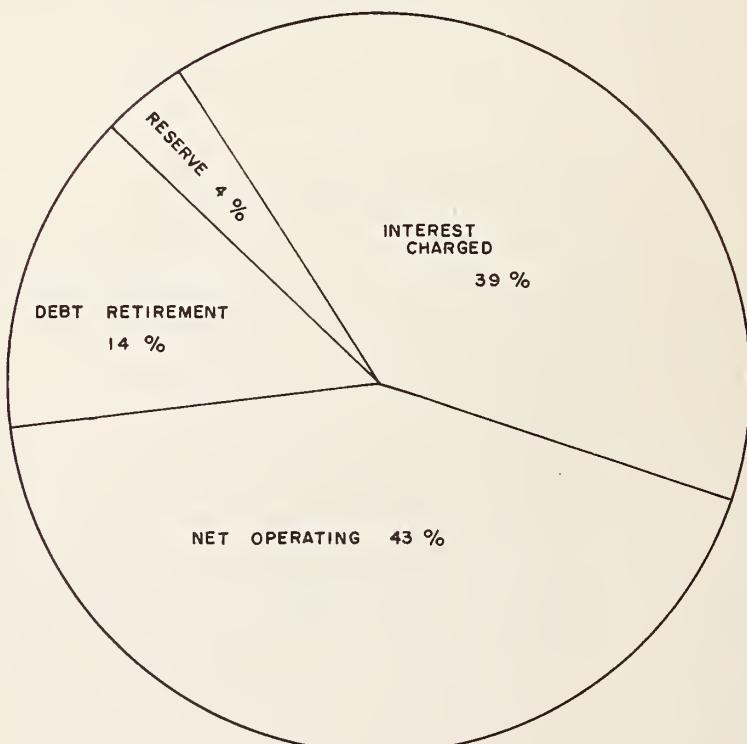
# YEARLY OPERATING COSTS

YEAR	M.G.TREATED	TOTAL COST	COST PER THOUSAND GALLONS
1963	387.069	\$38,040.12	\$0.10
1964	381.524	40,425.88	0.11
1965	370.564	42,165.16	0.11
1966	469.934	45,349.85	0.10
1967	506.222	46,873.97	0.09

## 1967 OPERATING COSTS



## TOTAL ANNUAL COST



## Process Data

### GENERAL

The treatment of water at the Bertie Township plant consists of raw water screening, microstraining to remove algae and gross solids, and disinfection by the addition of chlorine.

The following data provide information regarding plant flows, the quality of raw and treated water and the chlorine dosage necessary to maintain a safe product.

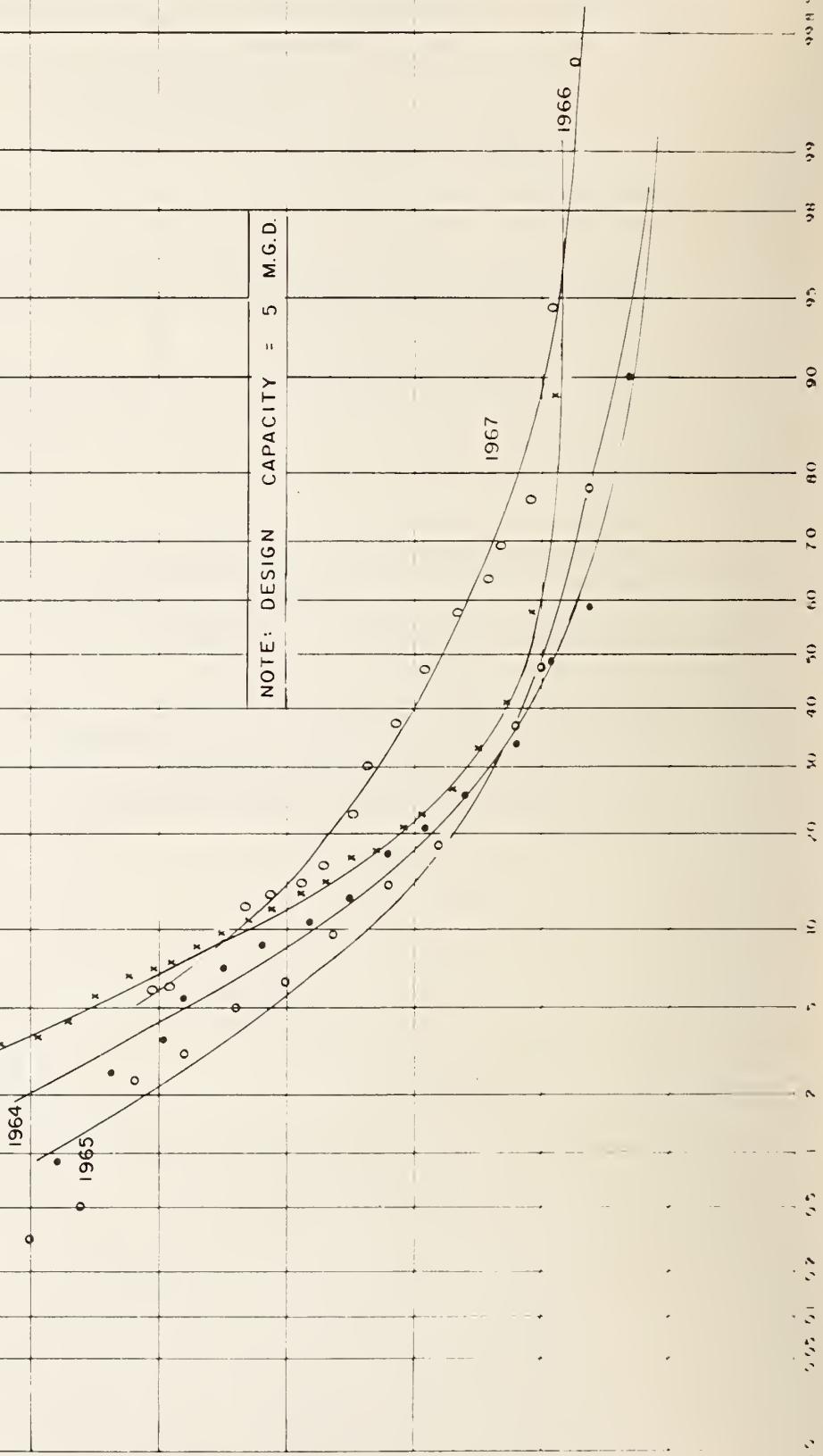
### FLOW

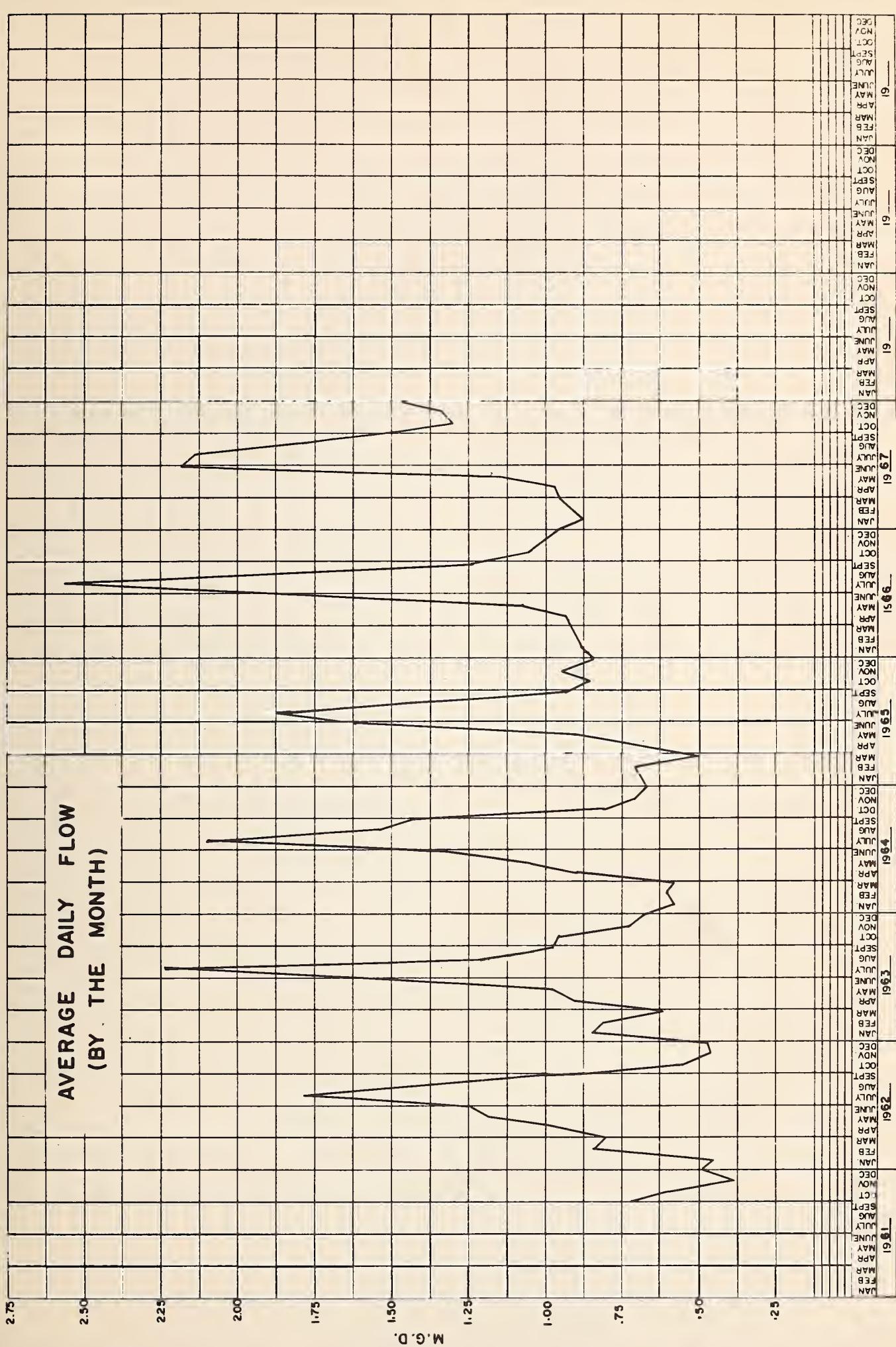
During 1967 a total of 506.22 million gallons of water was supplied to industries and residents in the municipality. The average daily flow was 1.9 million gallons, up 7.2% from 1966 and the maximum daily flow of 2.90 million gallons occurred on July 22, 1967.

Flows were again characteristically high in June, July and August during the racing and peak tourist season. The trend continued towards higher average daily flows during the year with a more abrupt increase in flow during the peak months than has been experienced in any previous year. The probability plot of total daily flows indicates the above noted features.

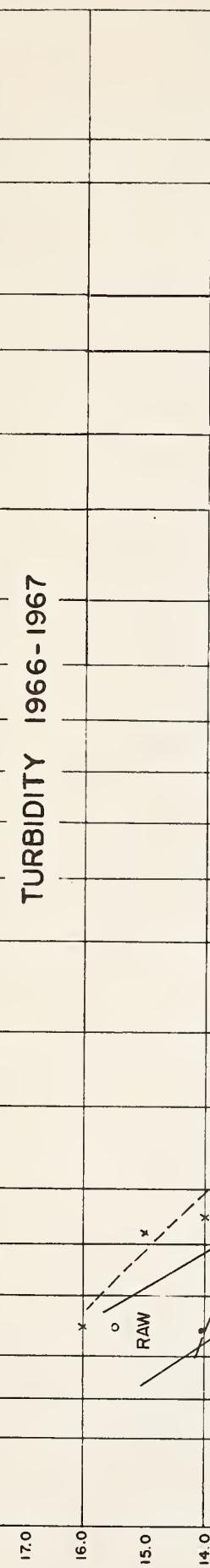
PROBABILITY PLOT  
TOTAL DAILY FLOWS

NOTE: DESIGN CAPACITY = 5 M.G.D.

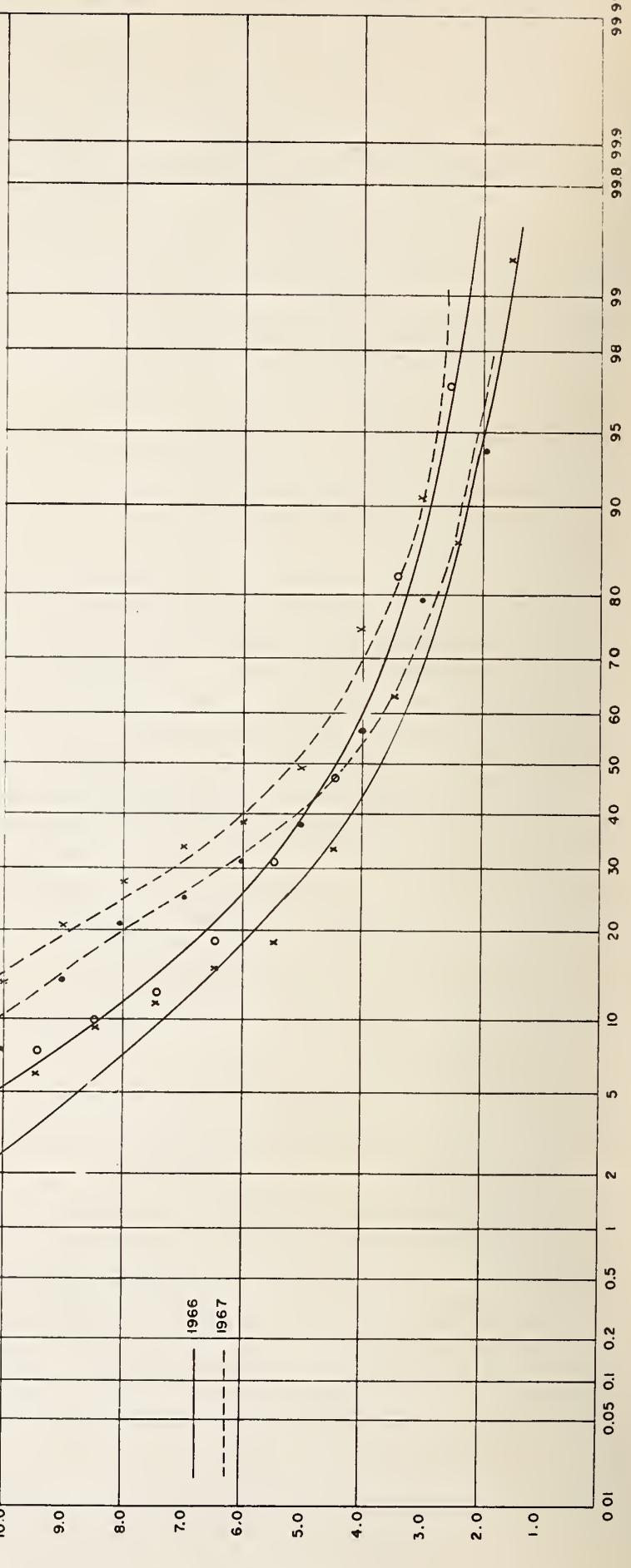




## TURBIDITY 1966-1967



The turbidity of water is a measure of the interference presented by suspended matter to the passage of light. This measurement indirectly measures the suspended matter such as clay, silt, finely divided organic matter or microscopic organisms present in the water. The treatment at the Bertie Township plant is designed principally to remove algae from the Lake Erie water by microstraining. Since algae is most prevalent in the summer months, the most marked reduction in turbidity through the plant occurs in this period.



## **CONCLUSIONS**

There was an increase in the total plant flow during 1966. This was due to both an increase in consumption during the peak summer months as well as an increase in average consumption during the rest of the year.

The bacteriological quality of the treated water was satisfactory during the year. There was a slight increase in treated water turbidities during the year indicating an increase in the raw water turbidities.

By reason of a well executed preventative maintenance and housekeeping program, the plant structure, equipment and grounds were in excellent condition at the close of 1967. However, an indication of the breakdown of the insulation resistance of the low voltage feeder cable was noted late in 1967. A detailed investigation will be carried out in 1968 with a view toward the possible replacement of the feeder cable.

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